Centipedes of Poznan Town (Poland)

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ABSTRACT

Quantitative studies on the centipedes of Poznan have been carried out since 1988. The studies cover areas with different degrees of transformation by man, like parks, squares, cemeteries, allotment gardens, dumping grounds, etc. As a result of these studies, the occurence of 18 centipede species has been found, constituting 33% of the Chilopodan fauna of Poland. Among the most frequent species found in Poznan, are: *Lithobius forficatus* and *Lithobius microps* from the order Lithobiomorpha and *Necrophloeophagus flavus* and *Schendyla nemorensis* from the order Geophilomorpha. The occurence of *Haplophilus subterraneus* has been registered for the first time in Poland. The studies are to be continued.

RÉSUMÉ

Chilopodes de la ville de Poznan (Pologne).

Les chilopodes de Poznan sont étudiés depuis 1988. Les recherches sont effectuées sur des sites diversement transformés par les activités humaines, tels que parcs, squares, cimetières, espaces verts, jardins, amas d'ordures, etc. Nous avons constaté la présence de 18 espèces, représentant 33% de la faune des chilopodes de Pologne. Parmi les espèces les plus fréquentes, on note : *Lithobius forficatus* et *Lithobius microps* pour l'ordre Lithobiomorpha, *Necrophloeophagus flavus* et *Schendyla nemorensis* pour l'ordre Geophilomorpha. L'espèce *Haplophilus subterraneus* a été répertoriée pour la première fois en Pologne.

INTRODUCTION

In the European myriapodological literature of the recent years, we can find some works describing the urban centipede fauna including -among others- Copenhagen (ENGHOFF, 1973), Göteborg (ANDERSSON, 1983) or Rome (ZAPPAROLI, 1990a, b).

In the polish literature, there are no works of this type so far, although in recent years, three masters theses were prepared referring to centipedes of Poznan and one study devoted to this group of animals is under preparation in Warsaw (WYTWER, this volume).

This work presents preliminary results of qualitative studies carried out since 1988 in Poznan.

STUDY AREA

Poznan is the largest town in Wielkopolska, founded in the 9th century. It is situated on Warta river at the altitude of 52-154 m above sea level, covering 261.3 km^2, with 589.7 thousands inhabitants. The climate is moderately continental . The annual rainfall is the lowest in Poland, below 500 mm. The annual isotherm is 8.5°C. The winters are

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mild (-2°C) and summers are warm (18°C). The growing season lasts 210-220 days. The relief is characterised by Baltic glaciation. The soils include podzolic and brown soils.

Poznan is a city of International Trade Fairs, visited since 1921 by business men presenting their merchandise from all over the world. This may exert an influence on the spreading of some plant and animal species.

MATERIAL AND METHODS

The following results refer to qualitative studies carried out in 1988. The material was collected by direct sampling of specimens under stones, timber, stems, etc. and by the use of litter sieving.

Samples were taken in 33 localities (in parks, cemeteries, squares, dumping grounds, etc.). These localities were divided into 3 categories, taking into consideration primarily their degree of influence by the activity of man.

Category I. - areas completely transformed by man and his continuous interference (e.g. railways, embankments, wild dumping grounds, roadsides).

Category II. - areas partially changed, covered with vegetation maintained by man (squares, cemeteries, allotment gardens).

Category III. - areas subject to the least interference (mainly less cultivated parks and afforested areas on town edges).

Each locality was inspected at least 5 times. The material was collected by up to three people. During 5 years (1988 - 1992), 1628 individuals belonging to Chilopoda orders were collected. The results include also some materials collected for a masters theses.

RESULTS

During the studies on the area of Poznan, the occurence of 18 centipede species have been found, including 11 belonging to the Geophilomorpha, 1 to the Scolopendromorpha and 6 to the Lithobiomorpha. For the first time, the two species *Clinopodes linearis* and *Clinopodes flavidus* have been registered for the fauna of Wielkopolska, and the occurrence of *Haplophilus subterraneus* has been found for the first time for the fauna of Poland. The most frequently occurring species include two lithobiomorphs: *Lithobius microps* and *Lithobius forficatus* and two geophilomorphs: *Necrophloeophagus flavus* and *Schendyla nemorensis* (Table I).

TABLE 1. — The occurence of centipedes in particular habitat types (number of localities).

	LIST OF IDENTIFIED SPECIES	Category I	Category II	Category III	Frequency
1	*Haplophilus subterraneus* (Shaw)	0	0	1	3%
2	*Schendyla nemorensis* (C. L. Koch)	5	6	5	48%
3	*Strigamia crassipes* (C. L. Koch)	0	5	2	21%
4	*Strigamia acuminata* (Leach)	0	0	1	3%
5	*Pachymerium ferrugineum* (C. L. Koch)	0	2	0	6%
6	*Clinopodes linearis* (C. L. Koch)	2	1	1	12%
7	*Clinopodes flavidus* C. L. Koch	0	2	0	6%
8	*Geophilus electricus* (Linné)	4	5	1	30%
9	*Geophilus proximus* C. L. Koch	1	1	0	6%
10	*Necrophloeophagus flavus* (De Geer)	4	5	7	48%
11	*Brachygeophilus truncorum* (Bergsö & Meinert)	4	3	2	27%
12	*Cryptops hortensis* Leach	0	2	6	24%
13	*Lithobius forficatus* (Linné)	8	7	9	73%
14	*Lithobius erythrocephalus* C. L. Koch	0	2	4	18%
15	*Lithobius melanops* Newport	1	3	4	24%
16	*Lithobius crassipes* L. Koch	1	3	5	27%
17	*Lithobius curtipes* C. L. Koch	0	0	3	9%
18	*Lithobius microps* Meinert	9	11	10	90%
	Number of species	10	14	15	

Remarks on the species (in decreasing frequency order)

1. *Lithobius microps* Meinert - European, eurytopic species, showing a tendency to occur very frequently in man-made habitats (EASON, 1964; ENGHOFF, 1973; ANDERSSON, 1983;

BARBER, 1985; LEWIS, 1985; ZYCH, 1989). In Poznan, this is the most frequent and numerous species in all categories of localities (Table I).

2. *Lithobius forficatus* (Linné) - W-Palaearctic, eurytopic species. In Poland, this is the most common representative of the genus (KACZMAREK, 1979, 1980). In Poznan it is very frequent everywhere.

3. *Necrophloeophagus flavus* (De Geer) - Palaearctic, eurytopic species. In Poland, it is present in natural and synanthropic habitats. The records from Poznan have been collected in all categories of localities (Table I).

4. *Schendyla nemorensis* (C. L. Koch) - W-Palaearctic, woodland species. In Poland, it is common in different woodlands but also in artificial habitats.

5. *Geophilus electricus* (Linné) - European, eurytopic species, with a tendency to be more numerous in urban localities. According to KACZMAREK (1980), in Poland it is rare and not numerous. In Poznan it seems to occur in habitats partially and completely changed by man (Table I).

6. *Lithobius crassipes* L. Koch - European, woodland species. In Poland, it is common in natural and synanthropic localities. In Poznan the highest proportion of records has been collected in areas of the category III (Table I).

7. *Brachygeophilus truncorum* (Bergsö & Meinert) - European, eurytopic species. In Poland, common in woodlands in the west part of the country (KACZMAREK, 1980). In Poznan, it has been found in all habitats sampled.

8. *Lithobius melanops* Newport - Palaearctic, woodland species. In Poznan, it has been collected in all categories of habitats but the largest proportion of records has been obtained from woody areas.

9. *Cryptops hortensis* Leach - Palaearctic, eurytopic species, in some regions synanthropic. The records from Poznan have been collected especially from less cultivated parks and woody areas (Table I).

10. *Strigamia crassipes* (C. L. Koch) - Palaearctic, eurytopic species. In Poland, it occurs in woodlands and synanthropic areas.

11. *Lithobius erythrocephalus* C. L. Koch - European, eurytopic species. In Polish lowlands, apart from *L. forficatus* and *L. mutabilis* - the most common representative of the genus. In urban localities, it is rare (KACZMAREK, 1980). In Poznan, it is mostly found in afforested areas on town outskirts (Table I).

12. *Clinopodes linearis* (C. L. Koch) - European, eurytopic species, in Poland mainly in synanthropic areas.

13. *Lithobius curtipes* C. L. Koch - European, woodland species. In Poland, it occurs in urban localities (KACZMAREK, 1980). The records from Poznan have been collected only from wooded areas (Table I).

14. *Geophilus proximus* C. L. Koch - European, woodland species. In Poznan, it has been recorded in areas changed by man.

15. *Clinopodes flavidus* C. L. Koch - Palaearctic, woodland species. In Poland, it is very rare. In Poznan, it has been collected for the first time for Wielkopolska.

16. *Pachymerium ferrugineum* C. L. Koch - Holarctic, eurytopic species. In Poland (and in Poznan), it occurs outside forests, in warm, dry places.

17. *Strigamia acuminata* (Leach) - Holarctic, woodland species. In Poznan, the records are from one old park.

18. *Haplophilus subterraneus* (Shaw) - an introduced species new for the fauna of Poland. The records (3 specimens) are an old park (LESNIEWSKA & WOJCIECHOWSKI, 1992).

Therefore, one may say that, from a zoographic point of view, the centipedes of Poznan represent the following elements:

- European - 8 (47%),
- Palaearctic - 7 (41%),

- Holarctic -2 (12%).

On an other hand, due to ecological requirements, the following species categories can be distinguished:

- eurytopic -10 (59%),
- woodland -7 (41%).

(Haplophilus subterraneus has not been taken into account.)

It has been found that the fauna of Poznan is poorer by 15 species than the Wielkopolska region where it is situated. The centipedes of Poznan represent 55% of the fauna of Wielkopolska and 33% of the fauna of Poland. Quantitative studies are under investigation.

CONCLUSION

The present results should be regarded as preliminary ones because quantitative studies are still under investigation. Nevertheless, the species composition and data referring to the frequency of occurrence are similar to those obtained by other authors investigating on the Chilopoda fauna of European towns (ENGHOFF, 1973; ANDERSSON, 1983; ZAPPAROLI, 1990 a, b).

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